DEPARTMENT OF ELECTRICAL ENGINEERING

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

The electrical engineering degree will prepare you for an exciting and rewarding career in a wide range of areas within the umbrella of the electrical engineering profession. Electrical engineers design and construct systems for aerospace, multimedia, telecommunications, electric power, robotics, signal processing and controls. In the aerospace arena electrical engineers develop new sensors, control and power systems. In communications, new networks are under development that will enhance both data and voice communications. Intelligent robotic systems are being developed to locate survivors in the debris from catastrophic events such as earthquakes. Electrical power systems engineering strive to develop safe, effective and efficient integration of traditional with renewable energy sources to increase capacity in the electrical power grid.

The first two years of curriculum contain the required science, mathematics, engineering, and computer science basics to prepare the student for the upper level courses. The junior and senior years of the traditional electrical engineering curriculum include 6 hours of technical electives, 3 hours of mathematics elective and 6 hours of electrical engineering electives which allow students to concentrate their studies in an area of specialization: electric power, controls and robotics, or communications. The Bachelor of Science in Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. Graduates are eligible to practice and become licensed professional engineers.

It is highly recommended that all freshmen engineering students purchase a laptop computer. The recommended laptop computer specifications are at: https://www.atu.edu/engineering/specifications.php.

For a detailed policy regarding transfer credit for the Electrical Engineering programs, please see the Electrical Engineering Program page.

The following curriculum represents the program of study and a suggested sequence for the Bachelor of Science in Electrical Engineering degree. The student should be aware that not all courses are offered each semester and the ordering of courses is subject to change. In order to minimize scheduling difficulties, each student should schedule a special session with their advisor at the beginning of their junior year to plan the remaining coursework.

Curriculum

Program: Bachelor of Science Electrical Engineering
Major: Electrical Engineering

The matrix below is a sample plan for all coursework required for this major.

Freshman

Fall	Credits
ENGL 1013 Composition I [1]	3
FAH 1XXX Fine Arts and Humanities Courses [1]	3
CHEM 2124 General Chemistry I and CHEM 2120 General Chemistry I Lab	4
MATH 2914 Calculus I	4
ELEG 1011 Introduction to Electrical Engineering	1
TECH 1001 Orientation to the University	1
Total Hours	**16**

Spring	Credits
ENGL 1023 Composition II [1]	3
COMS 1011 Programming Foundations I Lab and COMS 1013 Programming Foundations I	3
MATH 2924 Calculus II	4
ELEG 2130 Digital Logic Design Lab and ELEG 2134 Digital Logic Design	4

Spring	Credits
Total Hours	**15**

Sophomore

Fall	Credits
COMS 2203 Programming Foundations II	3
PHYS 2114 Calculus-Based Physics I and PHYS 2000 Physics Laboratory I	4
MATH 3243 Differential Equations I	3
ELEG 2103 Electric Circuits I	3
ELEG 3133 Microprocessor Systems Design	3
Total Hours	**16**

Spring	Credits
PHYS 2124 Calculus-Based Physics II and PHYS 2010 Physics Laboratory II	4
MATH 2934 Calculus III	4
ELEG 2111 Electric Circuits Laboratory	1
ELEG 2113 Electric Circuits II	3
STAT 3153 Applied Statistics	3
Total Hours	**15**

Junior

Fall	Credits
ELEG 3003 System Modeling and Analysis / MCEG 3003 System Modeling and Analysis	3
ELEG 3103 Electronics I	3
ELEG 3153 Electrical Machines	3
Technical Elective [3]	3
Electrical Engineering Elective [2]	3
Total Hours	**15**

Spring	Credits
ELEG 3123 Signals and Systems	3
ELEG 3143 Electromagnetics	3
ELEG 4103 Electronics II	3
ELEG 4202 Engineering Design / MCEG 4202 Engineering Design	2
MATH 2703 Discrete Mathematics	3
Total Hours	**14**

Senior

Fall	Credits
SS 1XXX Social Science Courses [1]	3
USHG 1XXX U.S. History and Government [1]	3
ELEG 4113 Digital Signal Processing [4]	3
ELEG 4143 Communication Systems I	3
ELEG 4191 Electrical Design Project I	1
ELEG 4303 Control Systems	3
Total Hours	**16**

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
ELEG 4122 Electrical Systems Lab	2
ELEG 4192 Electrical Design Project II	2
Technical Elective [3]	3
Electrical Engineering Elective [2, 4]	3
Total Hours	**13**

[1]See appropriate alternatives or substitutions in "General Education Requirements".

[2]Engineering Elective must be a 3000 or 4000 level Electrical Engineering course.

[3]Technical Elective must be a course from Engineering, MGMT 4203 Project Management, or the Sciences (excluding courses intended for Education Majors). All electives must have approval of the Department.

[4]This program partners the BSEE undergraduate degree with the MSEE degree. A maximum of 12 graduate level credit hours can be counted towards both the BSEE degree in Electrical Engineering and the MSEE degree. Four graduate level courses can be used to replace four upper-division undergraduate courses as follows:

- ELEG 5313 can replace ELEG 4313 Modern Control Systems
- ELEG 5113 can replace ELEG 4113 Digital Signal Processing
- ELEG 5153 can replace ELEG 4153 Communication Systems II
- ELEG 5133 can replace ELEG 4133 Advanced Digital Design
- ELEG 5993 can replace ELEG 4993 Special Problems in Engineering